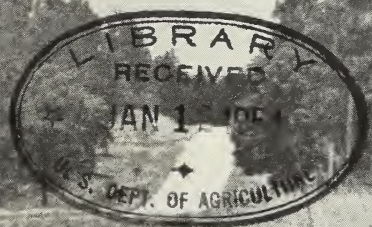
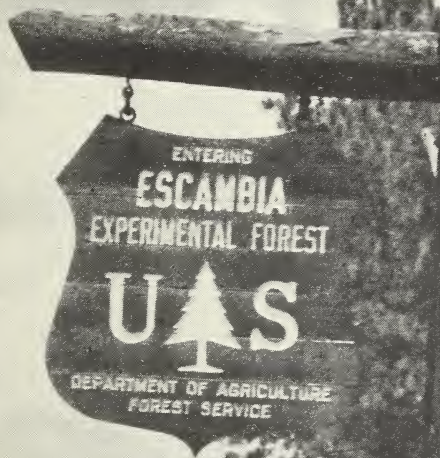


## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.



A99.34  
C87



Guide to

# ESCAMBIA EXPERIMENTAL FOREST



UNITED STATES  
DEPARTMENT OF AGRICULTURE  
LIBRARY



BOOK NUMBER A99.34  
847106 C87

Longleaf pine--one of the South's most valuable resources. Escambia re-search aims at finding better ways to manage longleaf pine lands.

October 1953

847106

GUIDE TO  
ESCAMBIA EXPERIMENTAL FOREST

Tom Croker and Walt Hopkins

The Escambia Experimental Forest is maintained by the Southern Forest Experiment Station as a field laboratory to study management of longleaf pine forests.

Research results apply directly to 4-1/2 million acres of longleaf land in southern Alabama and northwestern Florida, and to a great extent to the entire 20 million acres of longleaf lands in the South.

The Escambia was established in 1947. It is located 6 miles south of Brewton on forest lands provided without charge by the T. R. Miller Mill Company.

## DESCRIPTION

The Escambia Experimental Forest totals 2,990 acres. Longleaf pine (Pinus palustris) covers 2,458 acres, and slash pine (Pinus elliottii), found mostly along the drainageways, the remaining 532 acres.

When the forest was cruised in 1947 there were 73 pines per acre that were larger than 3-1/2 inches in diameter at breast height; they made up 32 square feet of basal area. Volumes per acre averaged 690 cubic feet (inside bark) for all trees larger than 3-1/2 inches, and 2,640 board feet (International 1/4-inch rule) in trees larger than 9-1/2 inches. Site index is about 70 feet in the longleaf type, and 80 feet for slash pine.

Soils are generally favorable to tree growth--sandy and well drained, but with adequate moisture. Topography is flat to rolling. Most slopes are between 3 and 10 percent. Elevation varies from 100 to 275 feet above sea level.

The climate is mild and humid, bordering on the sub-tropical. Occasional tropical hurricanes of considerable violence occur. Annual precipitation is about 60 inches, practically all in the form of rain. The average annual range of temperatures is from 20° to 100° F. The frost-free period is around 235 days, from about March 15 to November 10.





Carefully controlled fire is used to check brownspot needle disease and to prepare seed-beds. Wildfire, however, cannot be tolerated.

Protection against wildfire is provided by the Alabama Division of Forestry.

## RESEARCH PROGRAM

Forest managers in the longleaf territory need usable facts to guide them in the management of their lands. They need good methods to convert scrub hardwood land to pine; to build up stocking and quality in poorly stocked stands; to establish a new forest when mature timber is cut; to thin well-stocked stands; and to coordinate cattle grazing with timber management. They need accurate information on the costs, returns, and yields of small forests under intensive management. They also need tests of different management systems to determine which system is most suitable for their objectives. Escambia research is based on these needs.

### Management Systems

Will a longleaf forest that is even-aged by compartments yield more and better timber than a forest that has several even-aged groups within a compartment? Which forest provides the highest net return to the landowner? How do logging costs compare? Which is more profitable--growing a small tree in 40 years or a large tree in 80 years? Major management decisions hinge on answers to these questions.

Twenty-four 40-acre compartments are under management to compare single-aged compartments with many-aged compartments over short, medium, and long rotations--approx-





How can foresters build up the stocking and quality of understocked stands?

mately 40, 60, and 80 years. Starting in 1948, compartments assigned to a single age-class were cut back to seed trees. At the same time, first cuts were made in compartments destined to contain several age classes. These and future cuts will gradually develop the desired age-class pattern. The main objectives of this study will not be reached for many years, but useful byproducts are already being obtained. For example, logging costs (per cord or per MBM) in the many-aged compartments were practically the same as in the single-aged compartments, even though the cut per acre was much less in the former. .

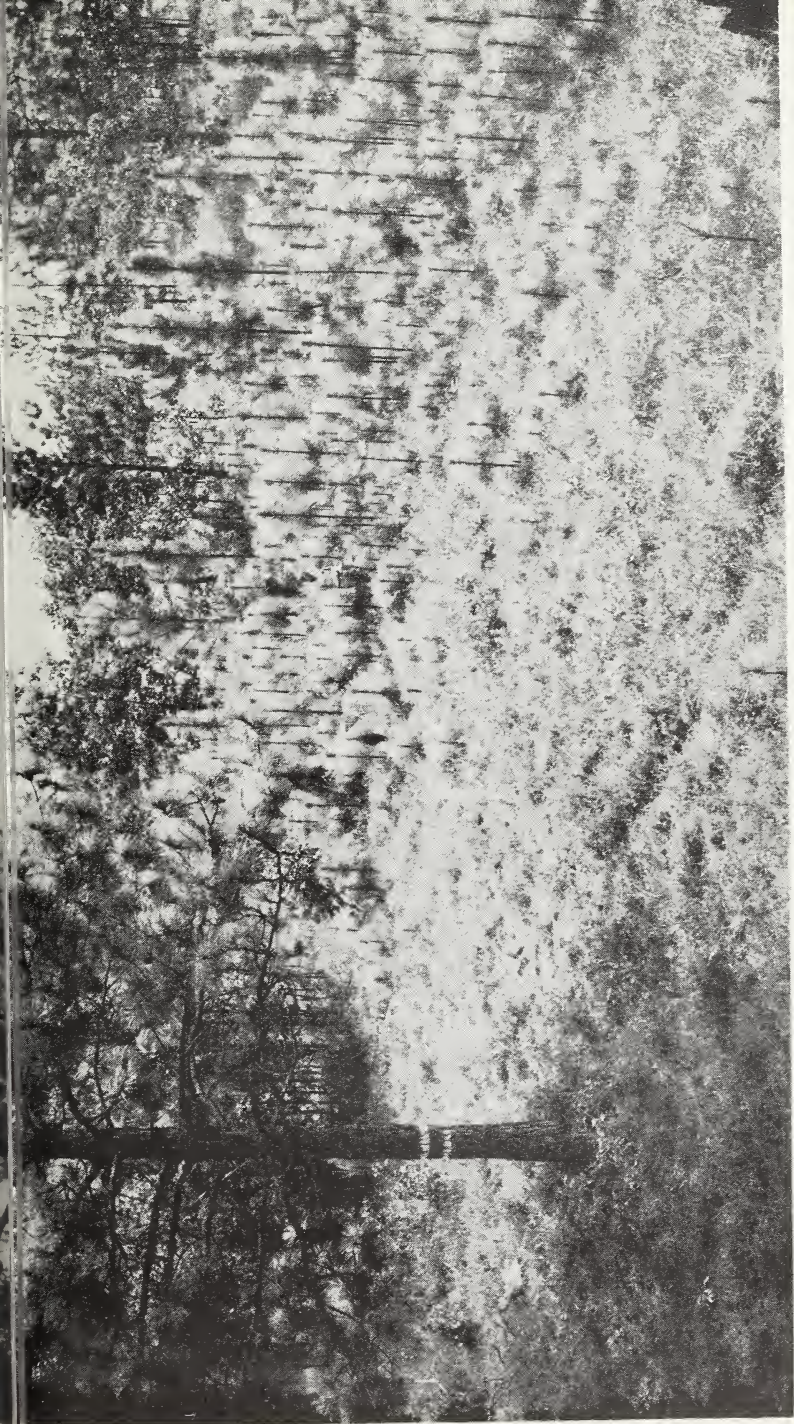
### Natural Regeneration

More than 3,000,000 acres or about 70 percent of the longleaf lands in south Alabama and northwest Florida are understocked. How can foresters build up the stocking and quality of these stands?

Longleaf pine is difficult to reproduce. All existing longleaf stands some day will die or be cut. How can they be re-established? Two of several needed studies are under way.

One of the first essentials is adequate seed production. Longleaf, when compared with other southern pines, is a poor seed producer. In 1949 a study was started to see if seed production can be increased by fertilizing potential seed trees and releasing them from competition.





When should seed trees be removed? Several hundred seedlings, of the same age as those on the right, are retarded by the seed tree and hidden in the grass.



A study to measure the competitive effect of seed trees and forest walls (a wall of older trees) upon adjacent longleaf seedlings was established in 1948.

These studies will throw light on methods of stimulating seed production, show when to remove seed trees, and indicate the minimum size of opening needed when several age-classes are to be grown in a compartment.

### Management of Immature Stands

Thinning of longleaf pine is an urgent management problem and knowledge is lacking. How often and how heavily should immature longleaf stands be thinned to obtain fast, high-quality growth? At what age should thinnings start? Which trees should be cut?

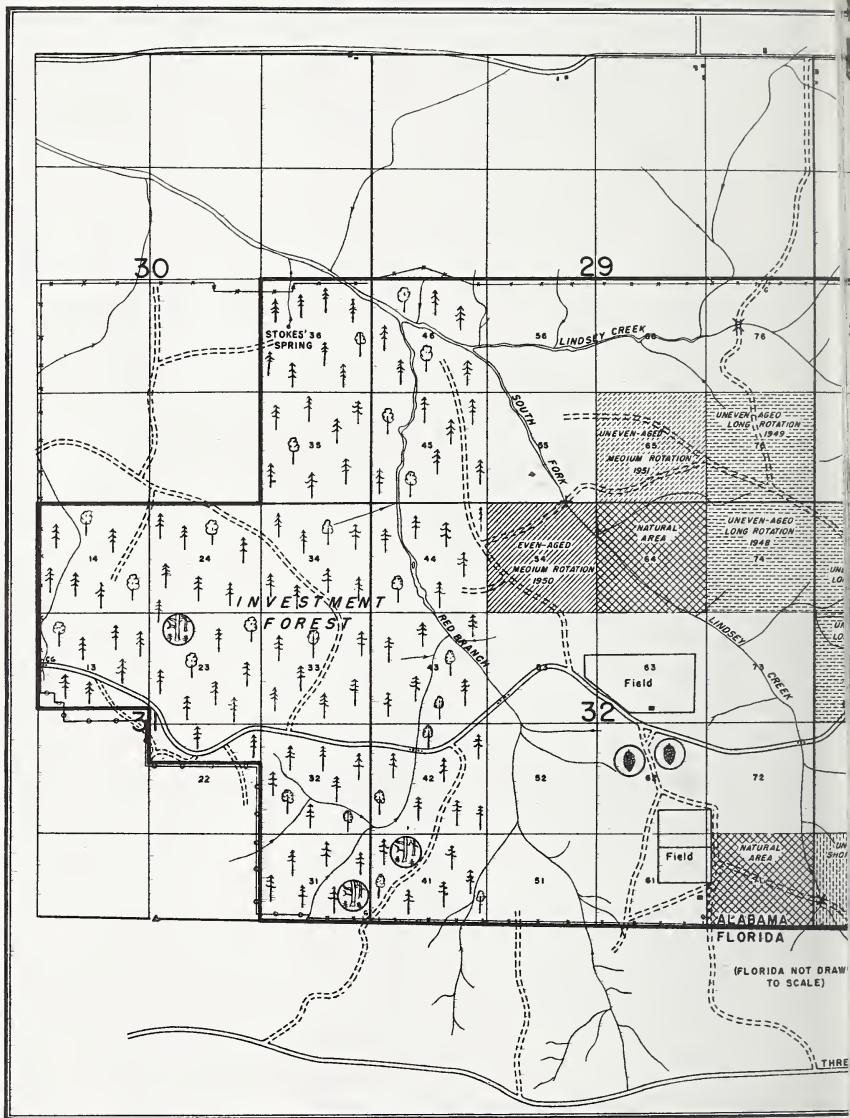
A study of the way in which different degrees of stocking affect growth was started in 1951. A more comprehensive study of growth and its relation to soils is in the planning stage.

One of the oldest thinning studies in the South was established in a 22-year-old longleaf forest by the Southern Forest Experiment Station near Loxley, Alabama. The Loxley plots, 65 miles southwest of Brewton, were first thinned in 1934. Results to date indicate that a moderate stocking of 600 to 900 trees per acre at age 22 will probably result in the best volume growth.



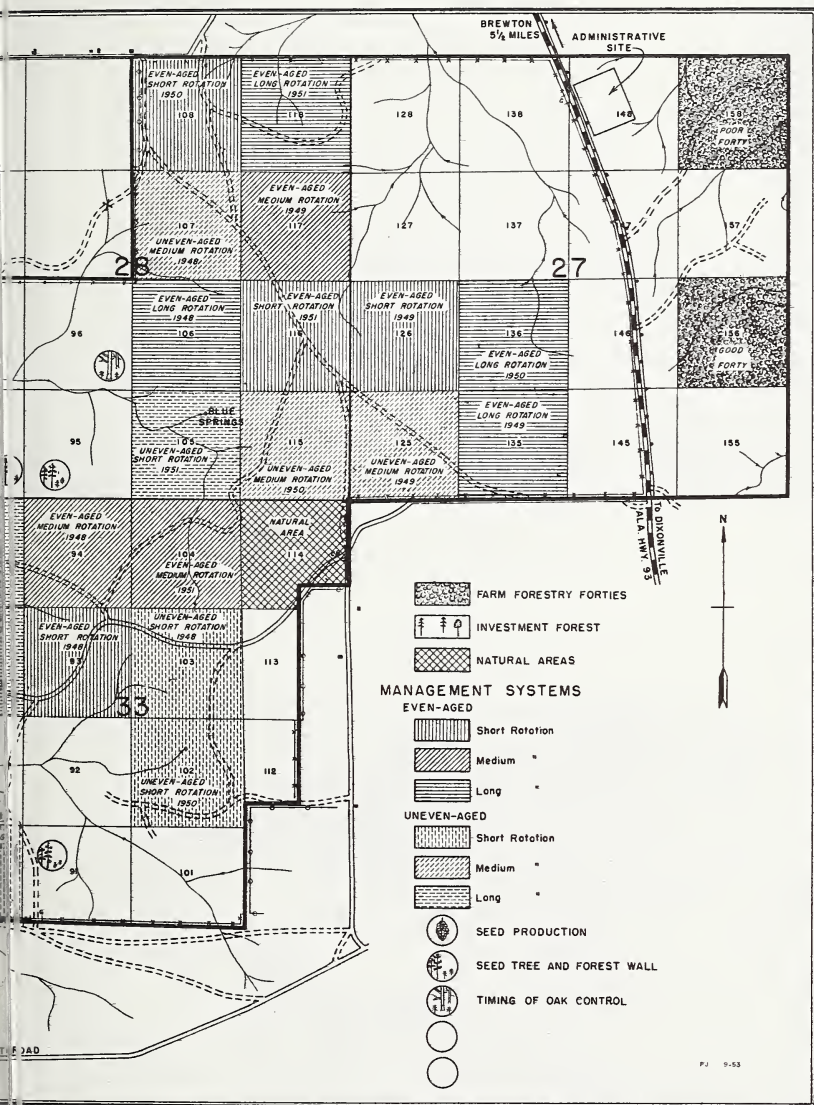
When should longleaf stands be thinned? How heavily?





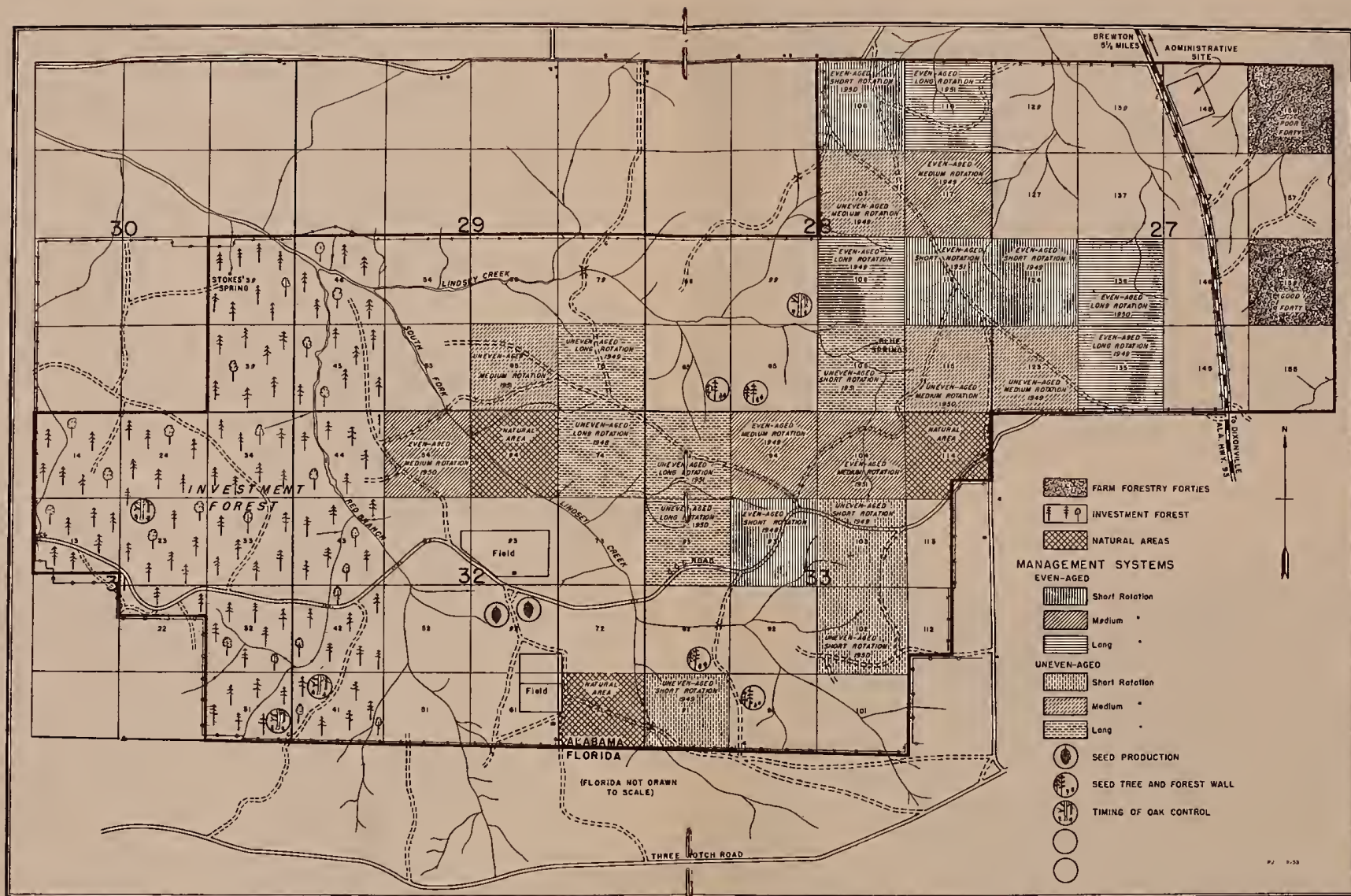
ESCAMBIA EXPE





INITIAL FOREST





ESCAMBIA EXPERIMENTAL FOREST





↑ This 5-year-old longleaf seedling is retarded by competition from scrub oaks.

↓ This 5-year-old seedling was released from scrub oak competition four years ago.



## Scrub Hardwood Control

Scrub hardwoods occupy thousands of acres that could be growing pine. Should such hardwoods be eliminated before, during, or sometime after pine seedfall?

Results to date indicate that controlling hardwoods prior to or more than a year after seedfall is undesirable.

## Profits from Forest Management

About half the forest land in this territory is in small ownerships. Many of the tracts have been heavily cut over in the past, and present returns are low. As a result, owners are often uncertain as to the land's best use. What are the costs and what are the returns when such lands are intensively managed and the best known practices are applied? Two Escambia studies are aimed toward answering these questions.

The "farm forty" study includes two 40-acre compartments managed as if they were farm woodlots.

When management started in 1947, the "good" forty contained about 3,000 board feet per acre; this is believed to be less than one-third of adequate stocking. Since then, annual cuts have been made, but each cut removes less than the annual growth. The poorer trees have





↑ Less than one year's growth from the "good" farm forestry 40.

↓ Grass is a valuable resource in longleaf forests.





been harvested first. During the past five years over \$2,000 worth of forest products have been removed, and there is more and better timber on the forty now than when cutting began.

The "poor" forty was so badly depleted that annual cuts have not been possible. Seed trees are being turpentineed conservatively to provide some revenue while a new stand of pine is being established.

The "Investment Forest" is a 641-acre tract of longleaf land managed as an investment ownership. Results will be of particular value to a large group of nonfarm owners of medium-sized tracts who are growing timber as a long-term investment.

### Forest Grazing

Raising beef cattle on forest ranges in this region is a growing industry. How can cattle and timber be grown together most profitably? How much grass is produced under various forest conditions? How many cattle can be grazed without damage to the forest, the range, or the soils?

In 1948 a study was established to determine the amount of grass produced in longleaf forests, and the amount that is grazed by cattle. In 1952, as part of a second study, a herd of 75 cattle started grazing the Escambia under per-



How much grass does a forest acre produce?  
How many forest acres does a cow need?



mit. Owners of the herd are keeping records of costs and beef produced.

### Natural Areas

Three 40-acre compartments have been set aside as natural areas. They will serve as check plots against the intensive management being practiced on the rest of the Forest. Regular inventories will be made to follow stand development.

### NOTES

- - - - -

- - - - -

- - - - -

- - - - -

- - - - -

- - - - -

- - - - -

- - - - -

- - - - -

- - - - -

- - - - -



Escambia research foresters designate trees to be cut. The Miller Mill Company handles the logging.





## NOTES

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



